Permit Fact Sheet

General Information

Permit Number:	WI-0043699-09-0
Permittee Name:	Waupaca Foundry Inc Plant 4
Address:	805 Ogden St
City/State/Zip:	Marinette WI 54143-2933
Discharge Location:	South bank of the main channel of the Menominee River, 360ft West of the Ogden Street Bridge
Receiving Water:	Menominee River, Wausaukee & Lower Menominee Rivers Watershed (GB13), Menominee River Basin, Upper Green Bay, in Marinette County
Stream Flow ($Q_{7,10}$):	1,240 cfs
Stream Classification:	Warm Water Sport Fish (WWSF) community; non-public water supply
Discharge Type:	Outfall 001 – Existing; Continuous / Outfall 004 Existing/Changed; Seasonal/Intermittent

Facility Description

Waupaca Foundry Inc Plant 4 (Waupaca Foundry) is a producer of ductile iron castings for the transportation and agricultural industries. The plant employs approximately 750 people and typically operates 24 hours a day, 5-7 days per week, 50 weeks per year. The facility uses scrap steel and pig iron as feedstock to melt iron in electric induction furnaces. Alloys are added to the melting process to achieve appropriate iron chemistry and physical properties. Molten iron is poured into sand molds to form the castings. The molding sand consists of silica sand, carbonaceous materials and bentonite clays. Frequently, a core is used within the mold cavity to provide a void space within the final casting. Cores are made at the facility and consist of silica sand and a small percentage of organic resin as a hardening agent. After the iron solidifies in the mold, the sand and castings are separated. The sand is processed and reused as the molding sand. The castings are transferred to the mill room where they are mechanically cleaned and ground prior to packing and shipping. Outfall 001 is composed primarily of noncontact cooling water (NCCW) from mold-making equipment, air compressor condensate, infrequent emergency NCCW from furnace inductor cooling systems, and discharge from the closed-loop furnace cooling system in emergencies such as power outages. These waste steams discharge via Outfall 001 on a nearly continuous basis to the Menominee River. Outfall 004 is composed of NCCW waste streams on an emergency basis, stormwater, and contaminated groundwater waste streams that are collected and treated via a portable granular activated carbon unit in June – July. Outfall 004 discharges on a noncontinuous basis to the Menominee River. The contaminated groundwater discharge from Outfall 004 is currently covered under the Contaminated Groundwater from Remedial Action Operations General Permit (WPDES General Permit No. WI-0046566-07-0) in accordance with s. NR 205.08, Wis. Adm. Code. By request of Waupaca Foundry, the Department has incorporated the contaminated groundwater discharge into Outfall 004 to be regulated under the individual permit during the reissued permit term.

Substantial Compliance Determination

Enforcement During Last Permit: A Notice of Noncompliance (NON) was sent 11/23/21 for failing to complete a plan review of modifications to the NCCW treatment which is considered a reviewable project per Chapter NR 108, Wis. Adm. Code. The facility has completed all previously required actions as part of the enforcement process.

After a desk top review of all discharge monitoring reports, compliance schedule items, and a site visit on 4/25/23, this facility has been found to be in substantial compliance with their current permit.

Compliance determination entered by Laura Gerold, Wastewater Engineer, on April 25, 2023.

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)**
001	Average Flow Rate: 0.0212 MGD (2019 – 2023)	Representative samples shall be obtained prior to discharge via Outfall 001 to surface water. Outfall 001 is composed primarily of noncontact cooling water (NCCW) from mold-making equipment, air compressor condensate, infrequent emergency NCCW from furnace inductor cooling systems, and discharge from the closed-loop furnace cooling system in emergencies such as power outages. These waste steams discharge via Outfall 001 on a nearly continuous basis to the south bank of the main channel of the Menominee River, approx. 360ft west of the Ogden Street Bridge.
004	Emergency Use Discharge Events: (reported during 2019 – 2023) Flow: 0.005535 MGD (10/15/19) Flow: 0.01948 MGD (2/29/20) Flow: 0.064885 MGD (5/3/20) Flow: 0.003695 MGD (7/2/20) Flow: 0.002515 MGD (7/7/20) Flow: 0.000965 MGD (7/9/20) Flow: 0.023795 MGD (8/3/20) Flow: 0.0021 MGD (9/3/20) Flow: 0.022 MGD (1/3/21) Flow: 0.018455 MGD (3/13/23) Flow: 0.025855 MGD (10/2/23)	Representative samples shall be obtained prior to discharge via Outfall 004 to surface water. Outfall 004 is composed of NCCW waste streams on an emergency basis, stormwater, and contaminated groundwater waste streams that are collected and treated via a portable granular activated carbon unit in June – July. Outfall 004 discharges on a noncontinuous basis to the north bank of the south channel of the Menominee River, approx. 670ft west of the Ogden Street Bridge and next to an abandoned railroad bridge. Samples shall be collected after emergency discharges AND when contaminated groundwater is treated via a portable granular activated carbon unit and discharged.

1 Surface Water - Monitoring and Limitations

Sample Point Number: 001- Noncontact Cooling Water

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Monthly	Total Daily	
Suspended Solids, Total	Daily Max	20 mg/L	Monthly	Grab	
Suspended Solids, Total	Monthly Avg	20 mg/L	Monthly	Grab	
Chlorine, Total Residual	Daily Max	38 ug/L	Monthly	Grab	
Chlorine, Total Residual	Monthly Avg	38 ug/L	Monthly	Grab	
Temperature		deg F	Monthly	Grab	Monitoring only January-December 2028.

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
PFOS		ng/L	Monthly	Grab	Monitoring only. See PFOS/PFOA Minimization Plan Determination of Need Schedule.
PFOA		ng/L	Monthly	Grab	Monitoring only. See PFOS/PFOA Minimization Plan Determination of Need Schedule.

Changes from Previous Permit:

- Addition of temperature monitoring during the fourth year of the permit (2028) to ensure 11 samples are available at the next permit reissuance.
- Addition of monthly monitoring for PFOS and PFOA in accordance with s. NR 106.98(2)(d), Wis. Adm. Code.

Explanation of Limits and Monitoring Requirements

Refer to the WQBEL memo, Water Quality-Based Effluent Limitations for the Waupaca Foundry Plant 4 Marinette WPDES Permit No. WI-0043699-09-0, for the detailed calculations, prepared by the Water Quality Bureau, Michael Polkinghorn, Water Resources Engineer, dated February 26, 2024 used for this reissuance.

Monitoring Frequencies – The Monitoring Frequencies for Individual Wastewater Permits guidance (April 12, 2021) recommends that standard monitoring frequencies be included in individual wastewater permits based on the size and type of the facility, in order to characterize effluent quality and variability, to detect events of noncompliance, and to ensure fairness and consistency in permits issued across the state. Guidance and requirements in administrative code were considered when determining the appropriate monitoring frequencies for pollutants that have final effluent limits in effect during this permit term.

Expression of Limits – In accordance with the federal regulation 40 CFR 122.45(d) and s. NR 205.065, Wis. Adm. Code, limits in this permit are to be expressed as daily maximum and monthly average limits whenever practicable. Minor changes have been made to the TSS and chlorine effluent limits.

Thermal – Requirements for Temperature are included in NR 102 Subchapter II Water Quality Standards for Temperature and NR 106 Subchapter V Effluent Limitations for Temperature. Thermal discharges must meet the Public Health criterion of 120 degrees F and the Fish & Aquatic Life criteria which are established to protect aquatic communities from lethal and sub-lethal thermal effects. Monthly temperature monitoring for one year is included in the permit in order to collect enough data to determine the need for temperature limits at the next permit reissuance.

PFOS and PFOA – NR 106 Subchapter VIII – Permit Requirements for PFOS and PFOA Dischargers became effective on August 1, 2022. At the first reissuance of a WPDES permit after August 1, 2022, the new rule requires WPDES permits for industrial dischargers to be evaluated on a case-by-case basis to determine if monitoring is required pursuant to s. NR 106.98(2)(d), Wis. Adm. Code. The Department evaluated the need for PFOS and PFOA monitoring taking into consideration industry type and other potential sources of PFOS or PFOA. Based on information available at the time the proposed permit was drafted, it was identified that the industrial discharger category may be a potential source of PFOS/PFOA, previous PFOS/PFOA sample results were within 1/5 of the PFOS or PFOA standards under s. NR 102.04(8)(d)1, Wis. Adm. Code, and the source water (municipal water supply) has known levels of PFOS/PFOA.

Therefore, monthly monitoring is included. The initial determination of need sampling shall be conducted for up to two years in order to determine if the permitted discharge has the reasonable potential to cause or contribute to an exceedance of the PFOS or PFOA standards under s. NR 102.04(8)(d)1, Wis. Adm. Code.

Sample Point Number: 004- NCCW and Contaminated GW

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Total Daily	
pH Field	Daily Min	6.0 su	Monthly	Grab	
pH Field	Daily Max	9.0 su	Monthly	Grab	
Oil & Grease (Hexane)	Daily Max	10 mg/L	Monthly	Grab	
Suspended Solids, Total	Daily Max	40 mg/L	Monthly	Grab	
PFOS		ng/L	Monthly	Grab	Monitoring only. See PFOS/PFOA Minimization Plan Determination of Need Schedule.
PFOA		ng/L	Monthly	Grab	Monitoring only. See PFOS/PFOA Minimization Plan Determination of Need Schedule.

Changes from Previous Permit:

- Addition of pH, oil & grease, and TSS monitoring and limits. The treated contaminated groundwater discharge, currently covered under WPDES General Permit No. WI-0046566-07-0, has been incorporated into this permit/outfall. Any effective limits required under the General Permit have been retained in the individual permit unless both antidegradation and antibacksliding conditions in ch. NR 207, Wis. Adm. Code, were met.
- Addition of monthly monitoring for PFOS and PFOA in accordance with s. NR 106.98(2)(d), Wis. Adm. Code.

Explanation of Limits and Monitoring Requirements

Refer to the WQBEL memo, Water Quality-Based Effluent Limitations for the Waupaca Foundry Plant 4 Marinette WPDES Permit No. WI-0043699-09-0, for the detailed calculations, prepared by the Water Quality Bureau, Michael Polkinghorn, Water Resources Engineer, dated February 26, 2024 used for this reissuance.

PFOS and PFOA – NR 106 Subchapter VIII – Permit Requirements for PFOS and PFOA Dischargers became effective on August 1, 2022. At the first reissuance of a WPDES permit after August 1, 2022, the new rule requires WPDES permits for industrial dischargers to be evaluated on a case-by-case basis to determine if monitoring is required pursuant to s. NR 106.98(2)(d), Wis. Adm. Code. The Department evaluated the need for PFOS and PFOA monitoring taking into consideration industry type and other potential sources of PFOS or PFOA. Based on information available at the time the proposed permit was drafted, it was identified that the industrial discharger category may be a potential source of PFOS/PFOA, previous PFOS/PFOA sample results were within 1/5 of the PFOS or PFOA standards under s. NR 102.04(8)(d)1, Wis. Adm. Code, and the source water (municipal water supply) has known levels of PFOS/PFOA.

Therefore, monthly monitoring is included. The initial determination of need sampling shall be conducted for up to two years in order to determine if the permitted discharge has the reasonable potential to cause or contribute to an exceedance of the PFOS or PFOA standards under s. NR 102.04(8)(d)1, Wis. Adm. Code.

2 Schedules

2.1 PFOS/PFOA Minimization Plan Determination of Need

Required Action	Due Date
Report on Effluent Discharge: Submit a report on effluent PFOS and PFOA concentrations and include an analysis of trends in monthly and annual average PFOS and PFOA concentrations. This analysis should also include a comparison to the applicable narrative standard in s. NR 102.04(8)(d), Wis. Adm. Code. This report shall include all additional PFOS and PFOA data that may be collected including any influent, intake, in-plant, collection system sampling, and blank sample results.	06/30/2025
Report on Effluent Discharge and Evaluation of Need: Submit a final report on effluent PFOS and PFOA concentrations and include an analysis of trends in monthly and annual average PFOS and PFOA concentrations of data collected over the last 24 months. The report shall also provide a comparison on the likelihood of the facility needing to develop a PFOS/PFOA minimization plan. This report shall include all additional PFOS and PFOA data that may be collected including any influent, intake, in-plant, collection system sampling, and blank sample results. The permittee shall also submit a request to the department to evaluate the need for a PFOS/PFOA minimization plan. If the Department determines a PFOS/PFOA minimization plan is needed based on a reasonable potential evaluation, the permittee will be required to develop a minimization plan for Department approval no later than 90 days after written notification was sent from the Department. The Department will modify or revoke and reissue the permit to include PFOS/PFOA minimization plan reporting requirements along with a schedule of compliance to meet WQBELs. Effluent monitoring of PFOS and PFOA shall continue as specified in the permit until the modified permit is issued. If, however, the Department determines there is no reasonable potential for the facility to discharge PFOS or PFOA above the narrative standard in s. NR 102.04(8)(d), Wis. Adm. Code, no further action is required and effluent monitoring of PFOS and PFOA shall continue as specified in the permit.	06/30/2026

Explanation of Schedules

PFOS/PFOA Minimization Plan Determination of Need – As stated above, NR 106 Subchapter VIII – Permit Requirements for PFOS and PFOA Dischargers became effective on August 1, 2022. S. NR 106.98, Wis. Adm. Code, specifies steps to generate data in order to determine the need for reducing PFOS and PFOA in the discharge. Data generated per the effluent monitoring requirements will be used to determine the need for developing a PFOS/PFOA minimization plan. As part of the schedule, the permittee is required to submit two annual Reports on Effluent Discharge.

If the Department determines that a minimization plan is needed, the permit will be modified or revoked/reissued to include additional requirements.

Attachments:

WQBEL Memo: Water Quality-Based Effluent Limitations for the Waupaca Foundry Plant 4 Marinette WPDES Permit No. WI-0043699-09-0, by Michael Polkinghorn, Water Resources Engineer, dated February 26, 2024

Expiration Date:

June 30, 2029

Justification Of Any Waivers From Permit Application Requirements:

No waivers from permit application requirements.

Prepared By: Sarah Donoughe, Wastewater Specialist-Adv **Date:** May 1, 2024

Notice of reissuance is published in the Eagle Herald, PO Box 77, Marinette, WI 54143-0077.

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: February 26, 2024

TO: Sarah Donoughe – NER/Green Bay Service Center

FROM: Michael Polkinghorn – NOR/Rhinelander Service Center

SUBJECT: Water Quality-Based Effluent Limitations for the Waupaca Foundry Plant 4 Marinette WPDES Permit No. WI-0043699-09-0

This is in response to your request for an evaluation of the need for water quality-based effluent limitations (WQBELs) using chapters NR 102, 104, 105, 106, 207, 210, 212, and 217 of the Wisconsin Administrative Code (where applicable), for the discharge from the Waupaca Foundry Plant 4 Marinette in Marinette County. This secondary industrial facility discharges to the Menominee River, located in the Wausaukee and Lower Menominee Rivers Watershed in the Menominee River Basin. The evaluation of the permit recommendations is discussed in more detail in the attached report.

Based on our review, the following recommendations are made on a chemical-specific basis:

Outfall 001

Parameter	Daily Maximum	Monthly Average	Footnotes
Flow Rate			1
TSS	20 mg/L	**20 mg/L**	1, 2
Chlorine (Total Residual)	38 µg/L	**38 µg/L**	1, 2
Temperature			3
PFOS and PFOA			4

Footnotes:

1. No changes from the current permit.
2. Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are included in bold.
3. Monthly temperature monitoring for 1 year is recommended during the reissued permit term to have updated temperature data to determine the need for temperature limits at the next permit reissuance.
4. Monthly monitoring is required in accordance with s. NR 106.98(2), Wis. Adm. Code.

Outfall 004

Parameter	Daily Maximum	Daily Minimum	Footnotes
Flow Rate			1
pH	9.0 s.u.	6.0 s.u.	2
Oil & Grease (Hexane)	10 mg/L		2
TSS	40 mg/L		2
PFOS and PFOA			3

Footnotes:

1. Monitoring whenever the discharge occurs.
2. Any effective limits required under the general permit will need to be retained in the individual permit unless both applicable antidegradation and antibacksliding conditions in ch. NR 207, Wis. Adm. Code, are met.
3. Monthly monitoring is required in accordance with s. NR 106.98(2), Wis. Adm. Code.

No WET testing is required for either outfall because information related to the discharges indicates low to no risk for toxicity. Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are not required due to the non-continuous nature of the Outfall 004's discharge.

Antidegradation

Outfall 004 is considered a "new discharge" under chapter NR 207, Wis. Adm. Code and is subject to the antidegradation requirements in NR 207.04, Wis. Adm. Code. To receive permit coverage for the discharge of any pollutant, the facility must submit a demonstration that one or more of the important economic or social development conditions listed in NR 207.04(c), Wis. Adm. Code, will be accommodated by the new discharger:

a. The discharger will be increasing its employment.
b. The discharger will be increasing its production level.
c. The discharger will be avoiding a reduction in its employment level.
d. The discharger will be increasing its efficiency.
e. There will be industrial, commercial, or residential growth in the community.
f. The discharger will be providing economic or social benefit to the community.
g. The discharger will be correcting an environmental or public health problem.

The facility is considered to be correcting an environmental/public health problem by treating PFAS substances in its contaminated groundwater stream in Outfall 004. Therefore, option "g" as described in s. NR 207.04(1)(c)1.g, Wis. Adm. Code, is met. No substances were found to result in a significant lowering of water quality as defined in NR 207.05, Wis. Adm. Code, for Outfall 004. Therefore, s. NR 207.04(d), Wis. Adm. Code, does not apply in this case. Therefore, the antidegradation requirements applicable to Outfall 004, are met.

Please consult the attached report for details regarding the above recommendations. If there are any questions or comments, please contact Michael Polkinghorn at (715) 360-3379 or Michael.Polkinghorn@wisconsin.gov and Diane Figiel at Diane.Figiel@wisconsin.gov.

Attachments (2) – Narrative & discharge area map.

PREPARED BY: Michael A. Polkinghorn – Water Resources Engineer

E-cc: Laura Gerold, Wastewater Engineer – NER/Green Bay Service Center
Heidi Schmitt-Marquez, Regional Wastewater Supervisor – NER/Green Bay Service Center
Diane Figiel, Water Resources Engineer – WY/3
Amy Garbe, Wastewater Engineer – WY/3

Attachment #1

Water Quality-Based Effluent Limitations for
Waupaca Foundry Plant 4 Marinette

WPDES Permit No. WI-0043699-09-0

Prepared by: Michael A. Polkinghorn

PART 1 – BACKGROUND INFORMATION

Facility Description

Waupaca Foundry Plant 4 Marinette (Waupaca FP 4 Marinette) is a producer of ductile iron castings for the transportation and agricultural industries. The plant employs approximately 750 people and typically operates 24 hours a day, 5 - 7 days per week, 50 weeks per year. The facility uses scrap steel and pig iron as feedstock to melt iron in electric induction furnaces. Alloys are added to the melting process to achieve appropriate iron chemistry and physical properties. Molten iron is poured into sand molds to form the castings. The molding sand consists of silica sand, carbonaceous materials and bentonite clays. Frequently, a core is used within the mold cavity to provide a void space within the final casting. Cores are made at the facility and consist of silica sand and a small percentage of organic resin as a hardening agent. After the iron solidifies in the mold, the sand and castings are separated. The sand is processed and reused as the molding sand. The castings are transferred to the mill room where they are mechanically cleaned and ground prior to packing and shipping.

Outfall 001 is composed of mostly noncontact cooling water (NCCW) from mold-making equipment and air compressor condensate (continuous discharge). Additional NCCW waste streams on an emergency basis from power outages can also be present from the north cooling tower loop and the north furnaces 6 – 10 loop. These waste steams discharge via Outfall 001 on a continuous basis to the south bank of the main channel of the Menominee River, approx. 360 ft west of the Ogden St. Bridge.

Outfall 004 is composed of NCCW waste streams on an emergency basis from the west cooling tower loop and the west furnaces 1 – 5 loop and are collected in a 2,350 gal holding tank. Additional stormwater and contaminated groundwater waste streams are collected over time in lower areas around the West Electrical Building footprint and are treated via a portable granular activated carbon unit in June – July when minimum levels are reached. Outfall 004 discharges on a noncontinuous basis to the north bank of the south channel of the Menominee River, approx. 670 ft west of the Ogden St. Bridge and next to an abandoned railroad bridge.

Attachment #2 is a discharge area map of Outfalls 001 and 004.

Existing Permit Limitations

The current permit, expired on 09/30/2023, includes the following effluent limitations and monitoring requirements for Outfall 001. Only effluent flow monitoring is required for Outfall 004. The contaminated groundwater discharge from Outfall 004 is currently covered under the Contaminated Groundwater from Remedial Action Operations General Permit (WPDES General Permit No. WI-0046566-07-0) in accordance with s. NR 205.08, Wis. Adm. Code. This permit specifies the conditions under which contaminated groundwater may be discharged to waters of the state for the purpose of achieving water quality standards contained in chs. NR 102 through 105, NR 140, and NR 207, Wis. Adm. Code. In this

case, the surface water limits and monitoring requirements of the general permit apply to Outfall 004, which include the following effluent limitations and monitoring requirements. Waupaca FP 4 Marinette wishes to add contaminated groundwater to Outfall 004 so this discharge will be regulated under the individual permit during the reissued permit term.

Outfall 001

Parameter	Daily Maximum	Monthly Average	Footnotes
Flow Rate			1
TSS	20 mg/L	**20 mg/L**	2
Residual Chlorine	38 µg/L	**38 µg/L**	2

Footnotes:

1. Monitoring only.
2. Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are included in bold.

Outfall 004

Parameter	Daily Maximum	Daily Minimum	Footnotes
Flow Rate			1
pH	9.0 s.u.	6.0 s.u.	2
Oil & Grease (Hexane)	10 mg/L		2
TSS	40 mg/L		2
PFOA			1
PFOS			1
PFBA			1
PFHxA			1
PFPeA			1
PFHpA			1
PFBS			1
PFHxS			1
4:2 FTS			1
6:2 FTS			1

Footnotes:

1. Monitoring only.
2. Any effective limits required under the general permit will need to be retained in the individual permit unless both applicable antidegradation and antibacksliding conditions in ch. NR 207, Wis. Adm. Code, are met.

Receiving Water Information

- Name: Menominee River
- Waterbody Identification Code (WBIC): 609000
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Warm Water Sport Fish (WWSF) community, non-public water supply. Cold Water and Public Water Supply criteria are used for bioaccumulating compounds of concern because the discharge is within the Great Lakes basin.
- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following 7-Q_{10} and 7-Q_2 values are from USGS for Marinette, WI, where Outfalls 001 and 004 are located.
  7-Q_{10} = 1,240 cubic feet per second (cfs)
  7-Q_2 = 1,740 cfs
  Harmonic Mean Flow = 2,255 cfs using a drainage area of 4,070 mi^2
  The Harmonic Mean has been estimated based on average flow and the 7-Q_{10} using an equation from U.S. EPA's *Technical Support Document for Water Quality-Based Toxics Control* (March 1991, EPA/505/2-90-001, pgs. 88-89).
- % of low flow used to calculate limits in accordance with s. NR 106.06(4)(c)5., Wis. Adm. Code: 25%.
- Source of background concentration data: Chloride data from the Menominee River at County Highway JJ are used for this evaluation. The numerical values are shown in the tables below. If no data is available, the background concentration is assumed to be negligible and a value of zero is used in the computations. Background data for calculating effluent limitations for phosphorus is described later in this evaluation.
- Multiple dischargers: There are several other dischargers to the Menominee River close to the discharge area including Kimberly Clark Corporation Marinette, Marinette Wastewater Utility, and Tyco Fire Products LP. Due to the significant level of dilution, any potential overlap in this section of the Menominee River is not considered in this evaluation.
- Impaired water status: The Menominee River (stream miles 0 – 3.45) is on the Clean Water Act (CWA) 303(d) list impaired for mercury and polychlorinated biphenyls (PCBs) contaminated fish tissue. The contributing pollutants are arsenic, PCBs, polycyclic aromatic hydrocarbons (PAHs), and mercury.

Effluent Information

- Flow rate(s):
  Maximum annual average (Outfall 001) = 0.0584 million gallons per day (MGD)
  For reference, the actual average flow for Outfalls 001 and 004 from October 2018 – December 2023 were 0.0229 and 0.0028 MGD respectively. Discharge from Outfall 004 is noncontinuous on an as needed basis where only 12 days of discharge occurred over the current permit term. Flows ranged from 0.000965 – 0.0649 MGD and typically occurred during days discharge did not occur at Outfall 001. Discharges of treated groundwater and collected stormwater (GP) ranged from 85 GPD – 0.44 MGD during December 2019 – November 2022 and occurred over 171 days of discharge. The overall actual average flow was 0.151 MGD but changes to 0.0138 MGD when only considering December 2020 – November 2022 flow data due to the significantly decreased flow magnitudes after April 2020. This later flow data set is expected to be more representative of future discharges from Outfall 004 when treated groundwater and collected stormwater are added to the discharge and is more in line with flow magnitudes currently demonstrated at Outfall 004. Because of this information and the limited effluent flow dataset for Outfall 004, the maximum annual average flow from Outfall 001

(0.0584 MGD) will be used to determine any limits or monitoring needs in this evaluation for both outfalls.

- Acute dilution factor used in accordance with s. NR 106.06(3)(c), Wis. Adm. Code: Not applicable – this facility does not have an approved Zone of Initial Dilution (ZID).
- Water source: City of Marinette.
- Additives: Waupaca FP 4 Marinette utilizes 4 additives in their process from the May 2021 Additive Review and part from the permit application and are listed below:
  - WATERTECH ENVIRODOSE 702PF – Scale and corrosion inhibitor used in both cooling tower loops.
  - WATERTECH 7424 Microbiocide – Biocide used in both cooling tower loops.
  - WATERTECH AEGIS 8551 – Corrosion inhibitor used in both furnace loops.
  - Sodium sulfite – Dechlorination in Outfall 001.
  - An additive review is not necessary for any additives where either the toxicity is well documented and understood, can be controlled by a WQBEL, or are not believed to be present in the discharge. In this case all additives were approved for use in the May 2021 Additive Approval where all additives (except sodium sulfite) are discharged on an emergency or infrequent basis where a typical discharge from Outfalls 001 and 004 would not have these additives present. In addition, in the case of Outfall 004 wastewater collected in the holding tank has the potential to be pumped back into the loop systems instead of continuing to Outfall 004. The best professional judgment reasoning is that the toxicity from any additive would be minimized and limits or use restrictions other than the proposed dosage and use frequency are not needed. The facility did not indicate they wished to increase the dosage or use frequency of any additive. **Therefore, an additive review is not needed at this time.**
- Effluent characterization: This facility is categorized as a secondary industry, so the permit application required effluent sample analyses for a limited number of common pollutants, as specified in s. NR 200.065, Table 1, Wis. Adm. Code, primarily chloride, phosphorus, ammonia nitrogen, and temperature. Any available effluent monitoring data required under the general permit for Outfall 004 are also utilized in this evaluation.
- Effluent data for substances for which a single sample was analyzed is shown in the tables in Part 2 below, in the column titled "MEAN EFFL. CONC.". Otherwise, substances with multiple effluent data are shown in the tables below or in their respective parts in this evaluation.

The following table presents the average concentrations and loadings at Outfall 001 from October 2018 – December 2023 and Outfall 004 from December 2019 – November 2022 for all parameters with limits in the current permit to meet the requirements of s. NR 201.03(6), Wis. Adm. Code:

Parameter Averages with Limits – Outfall 001

Parameter	Average Measurement*
TSS	7.4 mg/L
Chlorine (Total Residual)	<40 µg/L

*Any results below the level of detection (LOD) were included as zeroes in calculation of average.

Attachment #1

Parameter Averages with Limits – Outfall 004

Parameter	Average Measurement*
pH	6.4 s.u.
Oil & Grease (Hexane)	<1.4 mg/L
TSS	3.1 mg/L

*Any results below the level of detection (LOD) were included as zeroes in calculation of average.

PART 2 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR TOXIC SUBSTANCES – EXCEPT AMMONIA NITROGEN

Permit limits for toxic substances are required whenever any of the following occur:

1. The maximum effluent concentration exceeds the calculated limit (s. NR 106.05(3), Wis. Adm. Code)
2. If 11 or more detected results are available in the effluent, the upper 99th percentile (or P_{99}) value exceeds the comparable calculated limit (s. NR 106.05(4), Wis. Adm. Code)
3. If fewer than 11 detected results are available, the mean effluent concentration exceeds 1/5 of the calculated limit (s. NR 106.05(6), Wis. Adm. Code)

Acute Limits based on 1-Q_{10}

Daily maximum effluent limitations for toxic substances are based on the acute toxicity criteria (ATC), listed in ch. NR 105, Wis. Adm. Code. Previously daily maximum limits for toxic substances were calculated as two times the ATC. However, changes to ch. NR 106, Wis. Adm. Code, (September 1, 2016) require the Department to calculate acute limitations using the same mass balance equation as used for other limits along with the 1-Q_{10} receiving water low flow to determine if more restrictive effluent limitations are needed to protect the receiving stream from discharges which may cause or contribute to an exceedance of the acute water quality standards. The mass balance equation is provided below.

$$\text{Limitation} = \frac{(WQC)\,(Qs + (1-f)\,Qe) - (Qs - f\,Qe)\,(Cs)}{Qe}$$

Where:

WQC =Acute toxicity criterion or secondary acute value according to ch. NR 105, Wis. Adm. Code.

Qs = average minimum 1-day flow which occurs once in 10 years (1-day Q_{10}) if the 1-day Q_{10} flow data is not available = 80% of the average minimum 7-day flow which occurs once in 10 years (7-day Q_{10}).

Qe = Effluent flow (in units of volume per unit time) as specified in s. NR 106.06(4)(d), Wis. Adm. Code.

f = Fraction of the effluent flow that is withdrawn from the receiving water, and

Cs = Background concentration of the substance (in units of mass per unit volume) as specified in s. NR 106.06(4)(e), Wis. Adm. Code.

If the receiving water is effluent dominated under low stream flow conditions, the 1-Q_{10} method of limit calculation produces the most stringent daily maximum limitations and should be used while making reasonable potential determinations. This is not the case for Waupaca FP 4 Marinette and the limits are set based on two times the ATC.

The following tables list the calculated WQBELs for this discharge along with the results of effluent sampling. All concentrations are expressed in terms of micrograms per liter (µg/L), except for chloride (mg/L), and PFOA/PFOS (ng/L).

Daily Maximum Limits based on Acute Toxicity Criteria (ATC)
Outfall 001
RECEIVING WATER FLOW = 992 cfs, (1-Q_{10} (estimated as 80% of 7-Q_{10})), as specified in s. NR 106.06(3)(bm), Wis. Adm. Code.

SUBSTANCE	ATC	MAX. EFFL. LIMIT*	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.	1-day MAX. CONC.
Chlorine	19.0	38.1	7.61	<40	<40
Chloride (mg/L)	757	1,514	303	19	19

* The 2 × ATC method of limit calculation yields a more restrictive limit than consideration of ambient concentrations and 1-Q_{10} flow rates per the changes to s. NR 106.07(3), Wis. Adm. Code, effective 09/01/2016.

Weekly Average Limits based on Chronic Toxicity Criteria (CTC)
Outfall 001
RECEIVING WATER FLOW = 310 cfs (¼ of the 7-Q_{10}), as specified in s. NR 106.06(4)(c), Wis. Adm. Code

SUBSTANCE	CTC	MEAN BACK-GRD.	WEEKLY AVE. LIMIT	1/5 OF EFFL. LIMIT	MEAN EFFL. CONC.
Chlorine	7.28		24,992	4,998	<40
Chloride (mg/L)	395	7.3	1,330,986	266,197	19

Monthly Average Limits based on Wildlife Criteria (WC)
The effluent characterization did not include any effluent sampling results for substances for which WC exist.

Monthly Average Limits based on Human Threshold Criteria (HTC)
Outfall 004
The following calculated limits for PFOA and PFOS have water quality criteria based on the protection of adverse public health impacts but are considered similar to HTC. Therefore, the limit calculations are treated as if the criteria are based on HTC.
RECEIVING WATER FLOW = 564 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

SUBSTANCE	WQC	MEAN BACK-GRD.	MO'LY AVE. LIMIT	1/5 OF EFFL. LIMIT	30-day P_{99}	MEAN EFFL. CONC.
PFOA (ng/L)	20		124,872	24,974	283	
PFOS (ng/L)*	8		8	1.6		0.53

* A mixing zone may not be included for the PFOS limit calculation as described in s. NR 106.98(4), Wis. Adm. Code.

Monthly Average Limits based on Human Cancer Criteria (HCC)
The effluent characterization did not include any effluent sampling results for substances for which HCC exist.

Conclusions and Recommendations
Based on a comparison of the effluent data and calculated effluent limitations, **effluent limitations are not recommended for any toxic substances.** Limits and/or monitoring recommendations are made in the paragraph(s) below:

Total Residual Chlorine – Considering effluent chlorine data from the current permit term (October 2021 – December 2023), all results are nondetectable at <40 µg/L. These concentrations are lower than the calculated chlorine WQBELs so limits would not be recommended. However the previous limit evaluation (August 2018) showed Outfall 001 had reasonable potential for the daily maximum chlorine limit of 38 µg/L because of chlorine sourced from the City of Marinette water supply to the facility. The monthly average limit of 38 µg/L was also required to satisfy the expression of limits requirements as described in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes. Since then the facility has used sodium sulfite for dechlorination to comply with these limits. Because reasonable potential for chlorine WQBELs is likely to be demonstrated should dechlorination discontinue, **the current chlorine limits are recommended to remain during the reissued permit term as described in the limit continuation requirements in s. NR 205.067(5), Wis. Adm. Code.**

PFOS and PFOA – The need for PFOS and PFOA monitoring is evaluated in accordance with s. NR 106.98(2), Wis. Adm. Code. Available well monitoring sample data from the Marinette Waterworks (PWS ID: 43803958) is provided in the table below:

Water Supply PFAS Data

Sample Date	Sample ID	PFOS (ng/L)	PFOA (ng/L)
07/12/2022	630422001	1.07	
02/13/2023	CB01395-01	0.59	1.1
05/17/2023	CB05227-01	1.1	1.4
12/13/2023	CB15143-01	0.9	1.1
	Average =	0.92	1.2

The limited data above shows the municipal water supply is below 1/5th of the applicable PFOS and PFOA criteria. However, PFOA and PFOS may become concentrated through the NCCW processing and discharge through the facility, resulting in higher concentrations in Outfall 001 than what is present in the drinking water. There is also concern the different NCCW waste streams contributing to Outfall 001 may further concentrate the mass of PFOS and PFOA in the discharge, along with the uncertainty of the potential concentrations from the condensate waste stream with air deposition. These issues may potentially affect the effluent variability of PFOS and PFOA in Outfall 001 such that limits could be needed in the future. This data is needed to verify what is happening with PFAS as it is processed through the facility and is discharged through Outfall 001. Based on the type of discharge, close proximity to the known PFAS contamination site in Marinette, known levels of PFOS/PFOA in the source water, and the prior stated concerns, **monthly PFOS and PFOA monitoring is recommended during the reissued permit term for Outfall 001.**

Effluent PFOA and PFOS data are available from the GP discharge (December 2019 – November 2022) and are considered to be representative of the future discharge of Outfall 004 during the reissued permit term. The 30-day P_{99} PFOA concentration is 283 ng/L and the mean effluent PFOS concentration is 0.53 ng/L. These concentrations are below the calculated WQBELs for PFOA and PFOS respectively;

therefore, **limits are not recommended during the reissued permit term.** Because PFOA and PFOS are known to be present in the discharge and the discharge from Outfall 004 is inconsistent and not predictable, **monthly monitoring is recommended during the reissued permit term as described in s. NR 106.98(3)(a), Wis. Adm. Code, for Outfall 004.**

PART 3 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR BOD_5, TSS & DO

BOD_5 & DO

In establishing BOD_5 limitations, the primary intent is to prevent a lowering of dissolved oxygen levels in the receiving water below water quality standards as specified in ss. NR 102.04(4)(a) and (b), Wis. Adm. Codes. The 26-lb method (13-lb method for cold water community streams) is the most frequently used approach for calculating BOD_5 limits when resources are not available to develop a detailed water quality model. This simplified model was developed in the 1970's by the Wisconsin Committee on Water Pollution on the Fox, Wisconsin, Oconto, and Flambeau Rivers. Further studies throughout the 1970's proved this model to be relatively accurate. The model has since then been used by the Department on many occasions when resources are not available to perform a site-specific model. The "26" value stems from the following equation:

$$\frac{26\ {}^{\text{lbs}}/_{\text{day}}}{{}^{\text{ft}^3}/_{\text{sec}}} * \frac{1\,\text{day}}{86{,}400\,\text{sec}} * \frac{454{,}000\,\text{mg}}{\text{lbs}} * \frac{1\,\text{ft}^3}{28.32\,\text{L}} = 4.8 = 2.4 * 2\ {}^{\text{mg}}/_{\text{L}}$$

The 4.8 mg/L has been calculated by taking 2.4 mg/L which is the number one receives when converting 26 lbs of BOD/day/cfs into mg/L, multiplied by 2.0 which is the change in the DO level for warm water community streams. A typical background DO level for Wisconsin waters is 7 mg/L, so a 2 mg/L decrease is allowed to meet the 5 mg/L standard for warm water community streams. The above relationship is temperature dependent and an appropriate temperature correction factor is applied. The 26-lb method is based on a typical 24°C summer value for warm water streams. Adjustments for temperature are made using the following equation:

$$k_t = k_{24}\left(0.967^{(T-24)}\right)$$

Where k_{24} = 26 lbs of BOD/day/cfs

<u>Calculations based on Full Assimilative Capacity at 7-Q_{10} Conditions:</u>

$$WA\ Limit\ \left(\frac{mg}{L}\right) = 2.4 * (DO_o - DO_{std}) * \frac{7Q_{10} + Q_e * (1-f)}{Q_e} * 0.967^{T-24}$$

Where:

Q_e = effluent flow = 0.0584 MGD
DO_{stream} = background dissolved oxygen = 7 mg/L
DO_{eff} = 5.0 mg/L
DO_{std} = dissolved oxygen criteria from s. NR 102.04(4), Wis. Adm. Code = 5.0 mg/L
7-Q_{10} = 1,240 cfs
f = 0

DO_o = Initial mixed river DO = $\frac{DO_{eff} * Q_e + DO_{stream} * (7 - Q_{10} - Q_e * f)}{Q_e * (1-f) + 7 - Q_{10}}$ = 7.0 mg/L

T = Receiving water temperatures from s. NR 102.25, Wis. Adm. Code.

The table below shows the calculated weekly average BOD_5 WQBELs during May – October and November – April. Monthly receiving water temperatures from s. NR 102.25, Wis. Adm. Code, are averaged over each time period:

Calculated Weekly Average BOD_5 WQBELs

Parameter	May – October	November – April
Effluent Flow (MGD)	0.0584	0.0584
River Flow 7-Q_{10} (cfs)	1,240	1,240
River Temperature (°F)	66	37
River Temperature (°C)	19	2.6
Effluent DO (mg/L)	5.0	5.0
Background DO (mg/L)	7.0	7.0
Mix DO (mg/L)	7.0	7.0
DO Criterion (mg/L)	5.0	5.0
f	0	0
Concentration Limits (mg/L)	38,909	67,437
Mass Limits (lbs/day)	18,944	32,833

The table below shows the effluent BOD_5 results for Outfall 001 during September 2023 – November 2023:

BOD_5 Effluent Data

Sample Date	Conc. (mg/L)
03/07/2023	350
03/23/2023	180
09/05/2023	<30
09/13/2023	150
09/20/2023	<4
09/27/2023	<8
10/02/2023	54
10/11/2023	80
10/16/2023	<12
10/25/2023	78
11/01/2023	30
11/07/2023	63
11/14/2023	97
11/20/2023	57
11/29/2023	79
12/28/2023	170
1-day P_{99}	392

Attachment #1

4-day P_{99}	216
30-day P_{99}	109
Mean*	87
Std	88
Sample size	16

*Any results below the level of detection (LOD) were included as zeroes in calculation of average.

Based on a comparison of the calculated limits with effluent data, there is no reasonable potential for the discharge to exceed any of the calculated BOD_5 limits. **Therefore, BOD_5 or DO limits are not recommended during the reissued permit term.**

In addition, the effluent BOD_5 data provided can be considered unrepresentative of Outfall 001 as these concentrations are atypically high (false BOD_5 concentrations) for a discharge comprised primarily of NCCW. It was found the sodium sulfite, the additive used for dechlorination in Outfall 001, is an oxygen scavenger and uses up the oxygen available in the water. The BOD_5 analytical test measures the oxygen loss in a sample regardless of what causes it, so even though the oxygen loss may not be from an organic loading, the sample will appear as if BOD exists in the waste stream. This is similar to the effect of nitrifying bacteria present in domestic wastewater and appearing as available BOD_5 in a given sample.

Total Suspended Solids (TSS)
Total suspended solids (TSS) effluent limits are regulated via narrative standards described in NR 102.04(1), Wis. Adm. Code. TSS effluent limits are included whenever BOD_5 WQBELs are needed and are set equal to the BOD_5 limits but no lower than 10 mg/L per Department policy. **Because BOD_5 WQBELs are not recommended, TSS limits are also not recommended during the reissued permit term.**

The current permit has the TSS limits of 20 mg/L as a daily maximum and monthly average based on best professional judgement and expression of limits requirements respectively for Outfall 001. The daily maximum limit of 40 mg/L will be implemented for Outfall 004 because it was effective in the GP. **These limits are required to remain during the reissued permit term unless the applicable antibacksliding requirements are met as described in s. NR 207.12, Wis. Adm. Code.**

PART 4 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR AMMONIA NITROGEN

The State of Wisconsin promulgated revised water quality standards for ammonia nitrogen in ch. NR 105, Wis. Adm. Code, effective March 1, 2004 which includes criteria based on both acute and chronic toxicity to aquatic life. Given the fact that Waupaca FP 4 Marinette does not currently have ammonia nitrogen limits, the need for limits is evaluated at this time.

An effluent ammonia nitrogen sample of nondetectable at <0.039 mg/L was provided in the permit application. The previous permit application had a sample of 0.044 mg/L. Based on this effluent data, there is no reasonable potential for the discharge to exceed the most stringent ammonia nitrogen limits that would be calculated. **Therefore, ammonia nitrogen limits or monitoring are not recommended during the reissued permit term.**

PART 5 – PHOSPHORUS

Technology-Based Effluent Limit
Subchapter II of Chapter NR 217, Wis. Adm. Code, requires industrial facilities that discharge greater than 60 pounds of total phosphorus per month to comply with a 12-month rolling average limit of 1.0 mg/L, or an approved alternative concentration limit.

Because Waupaca FP 4 Marinette does not currently have an existing technology-based limit, the need for this limit in the reissued permit is evaluated. The maximum effluent phosphorus sample from the current permit term is 0.17 mg/L (01/04/2023). The maximum effluent flow from the current permit term for Outfall 001 is 0.263 MGD (06/01/2021). Assuming this concentration and flow occurs daily for 1 month, the estimated maximum monthly mass phosphorus discharge for Outfall 001 is 0.17 mg/L × 0.263 MGD × 8.34 × 30 days/month = 11 lbs/month. Assuming this maximum monthly mass phosphorus discharge for 1 year demonstrates that the annual monthly average phosphorus loading is less than the 60 lbs/month threshold in accordance with s. NR 217.04(1)(a)2, Wis. Adm. Code. **Therefore a technology-based limit is not recommended during the reissued permit term.** In addition, the need for a WQBEL for phosphorus must be considered.

Water Quality-Based Effluent Limits (WQBEL)
Revisions to administrative rules regulating phosphorus took effect on December 1, 2010. These rule revisions include additions to s. NR 102.06, Wis. Adm. Code, which establish phosphorus standards for surface waters. Subchapter III of NR 217, Wis. Adm. Code, establishes procedures for determining WQBELs for phosphorus, based on the applicable standards in ch. NR 102, Wis. Adm. Code.

Section NR 102.06(3)(a), Wis. Adm. Code, specifically names river segments for which a phosphorus criterion of 0.100 mg/L applies. For other stream segments that are not specified in s. NR 102.06(3)(a), Wis. Adm. Code, s. NR 102.06(3)(b), Wis. Adm. Code, specifies a phosphorus criterion of 0.075 mg/L. The phosphorus criterion of 0.100 mg/L applies for Menominee River as described in s. NR 102.06(3)(a)24, Wis. Adm. Code.

The conservation of mass equation is described in s. NR 217.13(2)(a), Wis. Adm. Code, for phosphorus WQBELs and includes variables of water quality criterion (WQC), receiving water flow rate (Qs), effluent flow rate (Qe), and upstream phosphorus concentrations (Cs) provided below.

$$\text{Limitation} = [(WQC)(Qs+(1-f)\ Qe) - (Qs-f\ Qe)\ (Cs)]/Qe$$

Where:

WQC = 0.100 mg/L for Menominee River.
Qs = 100% of the 7-Q_2 of 1,740 cfs.
Cs = background concentration of phosphorus in the receiving water pursuant to s. NR 217.13(2)(d), Wis. Adm. Code.
Qe = effluent flow rate = 0.0584 MGD = 0.0903 cfs.
f = the fraction of effluent withdrawn from the receiving water = 0.

Section NR 217.13(2)(d), Wis. Adm. Code, specifies that the background phosphorus concentration used in the limit calculation formula shall be calculated as a median using the procedures specified in s. NR

102.07(1)(b) to (c), Wis. Code. All representative data from the most recent 5 years shall be used, but data from the most recent 10 years may be used if representative of current conditions.

A previous limit evaluation (August 2018) resulted in a WQBEL of 321 mg/L using a background concentration 0.032 mg/L. This median was calculated from the Menominee River at the Ogden St. Bridge (n = 95, May 2007 – October 2015, SWIMS Station ID: 383021) downstream of the outfalls. Section NR 217.13(2)(d), Wis. Adm. Code, states that the determination of upstream concentrations shall be evaluated at each permit reissuance. Additional data were considered in estimating the background phosphorus concentration.

A review of all available in stream total phosphorus data stored in the Surface Water Integrated Monitoring System database indicates the median background total phosphorus concentration in the Menominee River at US Highway 41 in Marinette, WI, (n = 6, October 2011 – September 2012, SWIMS ID: 383016) is 0.027 mg/L, approx. 1.4 mi upstream of both outfalls.

Substituting a median value of 0.027 mg/L into the limit calculation equation above, the calculated limit is 1,406 mg/L.

Effluent Data & Reasonable Potential Determination
The following table summarizes effluent total phosphorus monitoring data from December 2022 – March 2023.

Total Phosphorus Effluent Data

Sample Date	Conc. (mg/L)
12/21/2022	0.082
12/28/2022	0.074
01/04/2023	0.17
01/11/2023	0.076
01/18/2023	0.075
01/25/2023	0.081
02/02/2023	0.061
02/08/2023	0.075
02/15/2023	0.085
02/22/2023	0.079
03/01/2023	0.069
03/07/2023	0.070
1-day P_{99}	0.17
4-day P_{99}	0.12
30-day P_{99}	0.10
Mean	0.083
Std	0.028
Sample size	12

The discharge does not have reasonable potential to cause or contribute to an exceedance of the water quality criterion because the 30-day P_{99} of reported effluent total phosphorus data is less than the

calculated WQBEL. **Therefore, phosphorus limits or monitoring are not recommended during the reissued permit term.**

PART 6 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR THERMAL

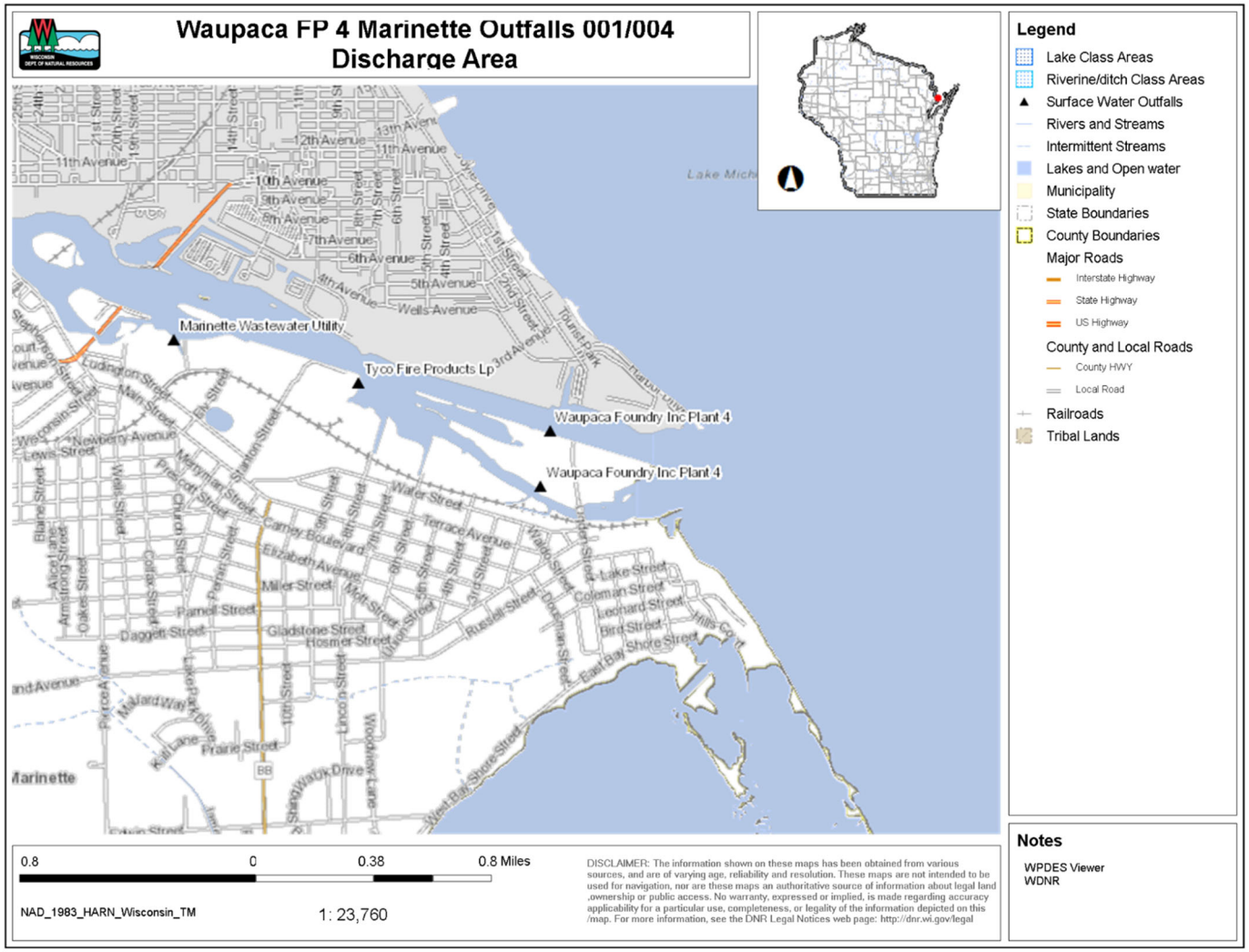
Surface water quality standards for temperature took effect on October 1, 2010. These regulations are detailed in chs. NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106 (Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. Daily maximum and weekly average temperature criteria are available for the 12 different months of the year depending on the receiving water classification.

Due to the amount of upstream flow available for dilution in the limit calculation (Qs:Qe >20:1), the lowest calculated limitation is 120° F as a daily maximum as described in s. NR 106.55(6)(a), Wis. Adm. Code. An effluent temperature sample of 65.3 ^{o}F (02/09/2023) was provided in the permit application. The maximum effluent temperature sample from the previous limit evaluation (August 2018) is 88 ^{o}F in September considering January 2006 – September 2013. **Therefore, temperature limits are not recommended during the reissued permit term. Monthly temperature monitoring for 1 year is recommended during the reissued permit term to have updated temperature data to determine the need for temperature limits at the next permit reissuance.**

PART 7 – WHOLE EFFLUENT TOXICITY (WET)

WET testing is used to measure, predict, and control the discharge of toxic materials that may be harmful to aquatic life. In WET tests, organisms are exposed to a series of effluent concentrations for a given time and effects are recorded. Decisions below related to the selection of representative data and the need for WET limits were made according to ss. NR 106.08 and 106.09, Wis. Adm. Code. WET monitoring frequency and toxicity reduction evaluation (TRE) recommendations were made using the best professional judgment of staff familiar with the discharge after consideration of the guidance in the *Whole Effluent Toxicity (WET) Program Guidance Document (2022).*

Chronic testing is usually not recommended where the ratio of the 7-Q_{10} to the effluent flow exceeds 100:1 and acute testing is not typically recommended if the ratio exceeds 1,000:1. For Waupaca FP 4 Marinette, that ratio is approx. 13,728:1. With this amount of dilution, there is believed to be little potential for acute or chronic toxicity effects in the Menominee River associated with the discharge from Waupaca FP 4 Marinette. **Therefore, acute and chronic WET testing is not recommended during the reissued permit term.**


Waupaca FP 4 Marinette Outfalls 001/004
Discharge Area
Marinette Wastewater Utility
Tyco Fire Products Lp
Waupaca Foundry Inc Plant 4
Waupaca Foundry Inc Plant 4
Lake Mich
Marinette
Legend
Lake Class Areas
Riverine/ditch Class Areas
Surface Water Outfalls
Rivers and Streams
Intermittent Streams
Lakes and Open water
Municipality
State Boundaries
County Boundaries
Major Roads
Interstate Highway
State Highway
US Highway
County and Local Roads
County HWY
Local Road
Railroads
Tribal Lands
Notes
WPDES Viewer
WDNR
0.8 0 0.38 0.8 Miles
NAD_1983_HARN_Wisconsin_TM
1: 23,760
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